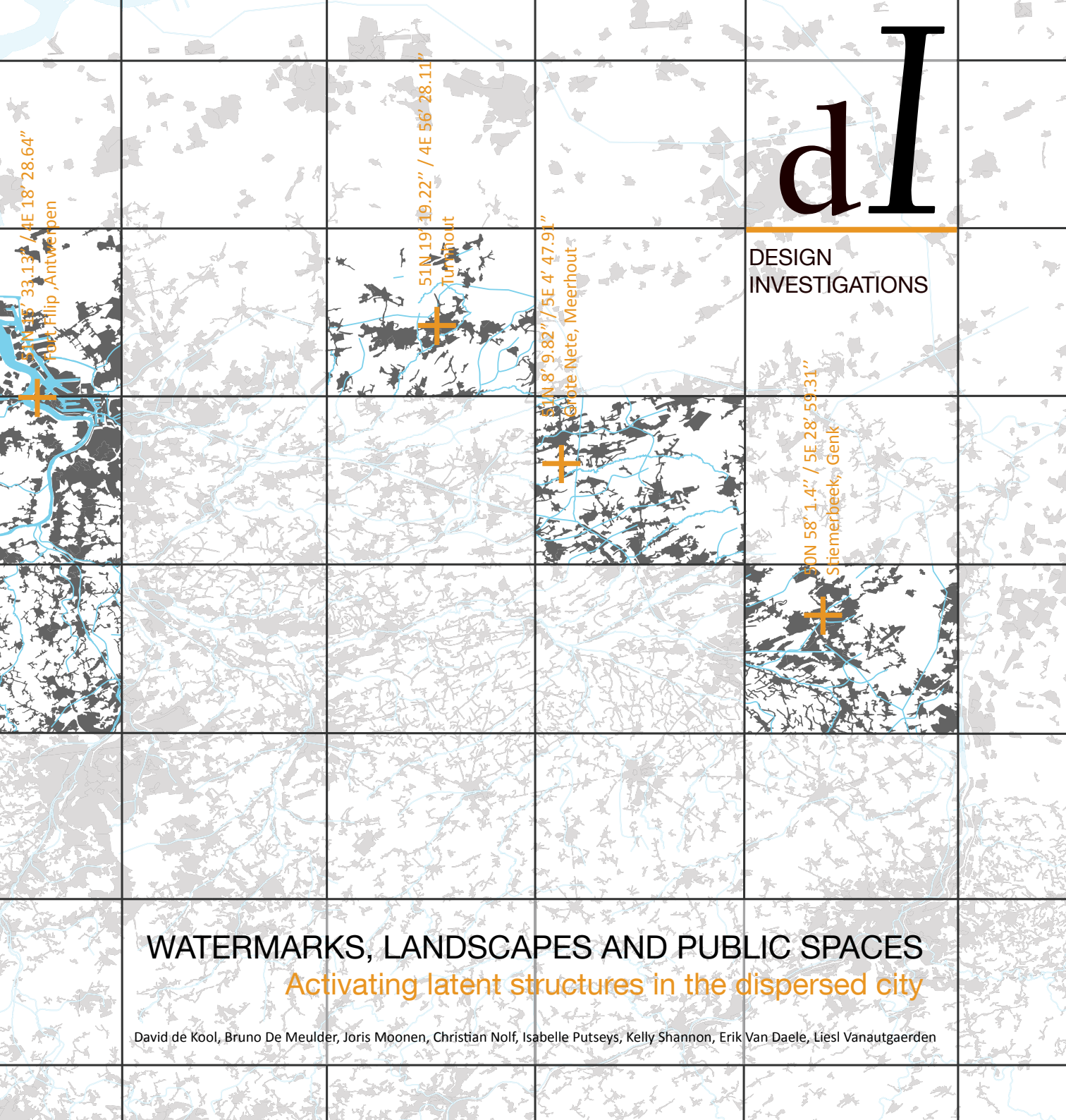

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DESIGN
INVESTIGATIONS

WATERMARKS, LANDSCAPES AND PUBLIC SPACES

Activating latent structures in the dispersed city

David de Kool, Bruno De Meulder, Joris Moonen, Christian Nolf, Isabelle Putseys, Kelly Shannon, Erik Van Daele, Liesl Vanautgaerden

WATERMARKS, LANDSCAPES AND PUBLIC SPACES

Activating latent structures in the dispersed city

On latency and residuality. Towards a structuring of the diffused city

OSA has a long standing interest in the diffused landscape of Flanders. This resulted amongst others in the test of various design strategies to activate the latent structures of this diffused landscape. Instead of superimposing newly invented structures, OSA indeed unfolded the capacity of existing figures, patterns, and structures that bring clarity in its spatial structure and demonstrate its capacity to canalize the needs of today and tomorrow. The Flemish diluted urban constellation is conventionally considered neither a typical, nor a qualitative urban system. OSA advocates the thesis that the quality of the diffused city is largely determined by its open spaces. If there's is any quality in this diluted urban structure it's in the omnipresence, availability and usually accessibility of open space to begin with, and within the potentiality of this open, often residual, spaces, to enrich and structure spatially.

Apart from the conventional and consolidated open spaces the Flemish landscape consists indeed for a large part of rather banal, obscure and fragmented open spaces. They very often are underused or negated spaces, sometimes derelict and often abandoned and/or isolated by infrastructures.
As such these open space are not designed. They are often the collateral by-product of a mismatch between regional projects, regional logics and local spatial qualities.
One tends to consider these spaces as neglected, residual spaces of which we take the derelict and banal character for granted. The residuality gives these spaces a certain degree of vagueness in use or identity. They're seldomly the object of strong claims, what allows spontaneous appropriations that often cleverly exploit the residual value.

As loci of opportunity, these residual spaces offer Flanders latent structures that can be activated to address contemporary urban questions such as inclusion, ecology, mobility, water management, sustainability etc.
Some of these spaces are or were water-sick areas. It is as if they were waiting for the regional water management to reactivate them as a working landscape integrated (cases Stiemerbeek and Turnhout). Locally, they often offer possibilities for complementary public space that allows various forms of appropriations. Some of them actually already function as uncontrolled free havens of public life and the design challenge then is how to safeguard this precious characteristic. (cases Deinze and Fort Filip)

Bruno De Meulder & Erik Van Daele

Physical residual space
because of physical characteristics

Wet terrains
Poor soils
Hillsides

Structural residual space
because of morphological characteristics

Enclaved and inner areas
Second order plots
Isolated and cutoff terrains
Dead-end and oversized infrastructure
Ineffective sized plots

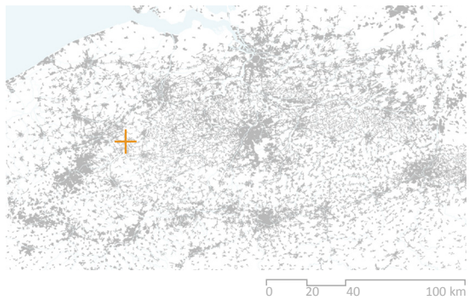
Programmatic residual space
because of mismatch current use and terrain characteristics

Temporary vacant terrains
Depleted quarries and mining sites
Vacant cloisters
Military domains
Outdated infrastructures

Juridical residual space
because of juridical status

Non aedificandi zones
Unoccupied designated areas
Neglected protected areas
Polluted terrains
Technical no-build areas

Gaverbeek, Zwevegem
50N 48' 33.47" / 3E 21' 17.20"



The manipulated basin of the Gaverbeek creek, located on the slopes of the Leie River Basin, traces its trajectory through a hilly territory interspersed by small village cores to arrive in the river bed of the now canalized Leie River that is almost completely urbanized(1). A network of steep narrow tributaries converges into the flat plains of the Gaverbeek creek. During the last century a series of wet marshy pits were drained to avoid the nuisance of flooding. Infrastructures, industrial patches and housing allotments incrementaly filled in the available drained s areas. However, by draining and land filling the natural sponges, the landscape lost its capacity to accommodate flooding. At the same time a problem of flooding appeared along the upstream tributaries mainly caused by accelerated rainwater discharge of the headwater valleys.

To cope with flooding issues, the new water management plans in Flanders propagate a basin approach in which the aim is to retain water as much as possible upstream and to give back space to the water system to restore the self-regulating capacity. In the fragmented and dispersed territory of the Gaverbeek, the re-naturalization of the water system is however far from evident. The proposed design strategies therefore re-direct the water-urban relationships in two gestures (3); reclamation of marshes into a wetland park and the installation of upstream retention plains on the tributaries through a cascade of small dams. A careful stitching of reclaimed marshes allows re-installing a wet ecology in the lower lying areas, integrating infrastructural and industrial barriers into productive landscapes and re-activating residual spaces in the landscape.

Although urbanization historically used to be intertwined with the water system, this seems to be forgotten during the turbulent 20th century during which more and more water infrastructures were placed in the creek beds.
At the same time the wet grasslands changed from frontsides into

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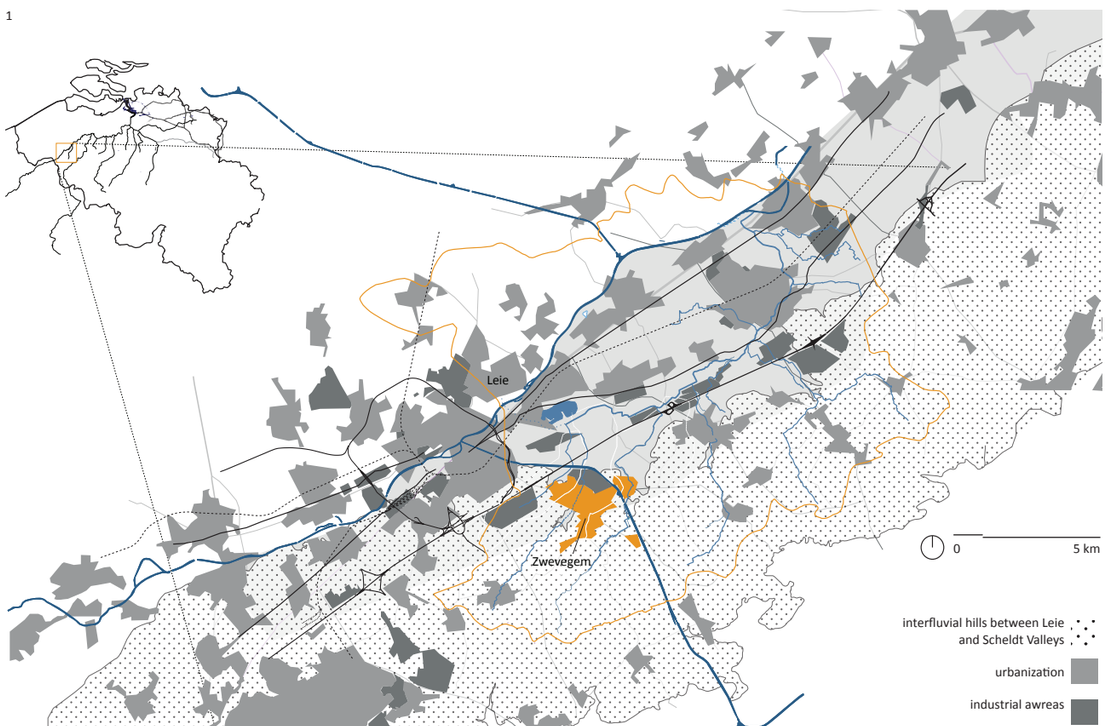

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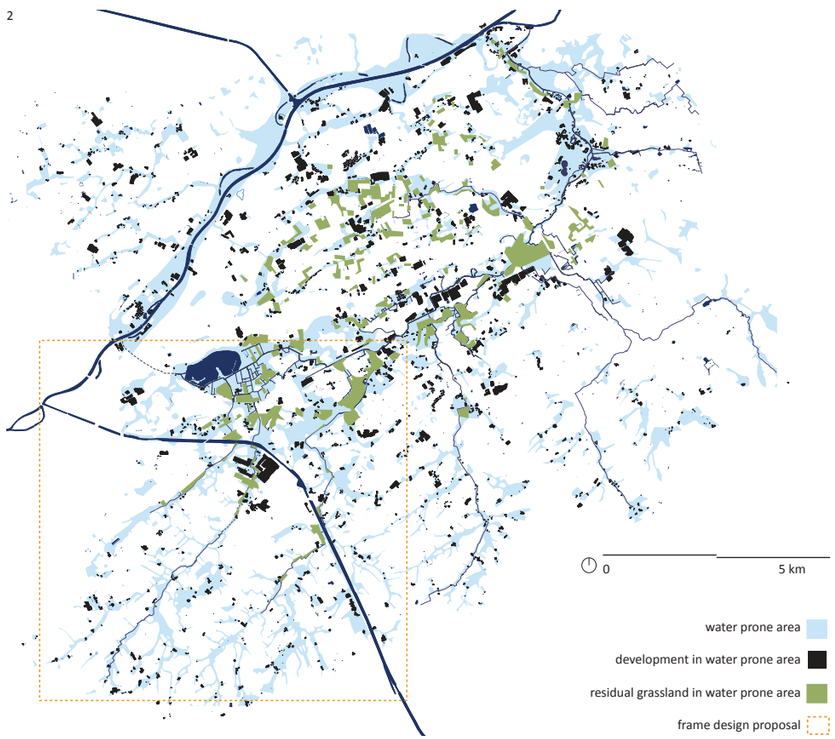

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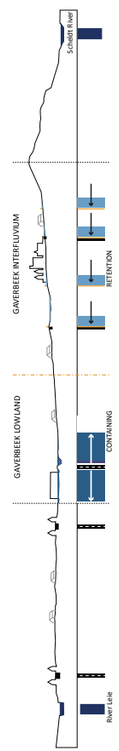
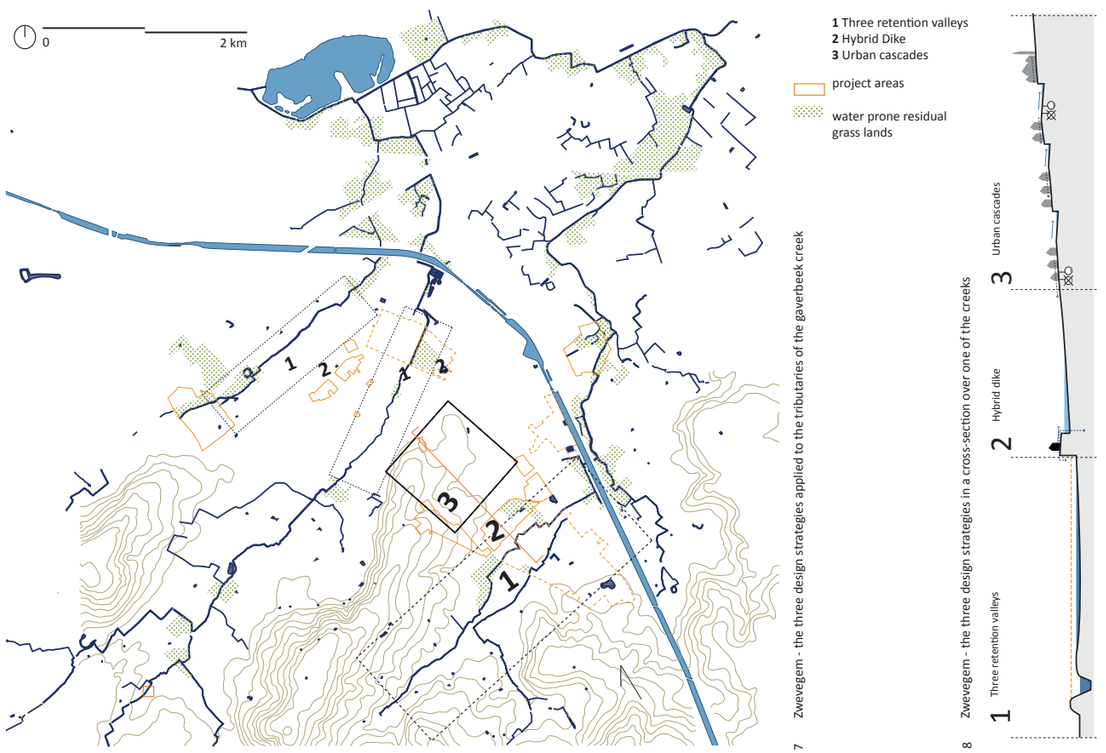


backsides. Due to piping and straightening of the streams and due to the superimposition of roads and industrial patches, some of these wet grasslands are neglected and became leftovers of urban and infrastructural development. However, these leftovers, these residual grasslands (2) can today be seen as opportunities to re-naturalize the creek valleys and accommodate water to be retained.
In the following design these residual grasslands are re-installed as constructed floodplains, as a stepped set of plains on the trajectory of the creeks.

A careful stitching of reclaimed marshes allows re-installing a wet ecology in the lower lying areas, integrating infrastructural and industrial barriers into productive landscapes and re-activating residual spaces in the landscape.
However, extension plans of the municipality in the creek town of Zwevegem (7, in red) challenge the opportunities for upstream retention. New conventional alotments are encroaching on remaining spaces of the three creek valleys that edge the town. The design proposes to articulate these edges and limit the expansion, hereby defining the perimeter of Zwevegem. The strategy names 'three retention valleys' therefore, embodies the limit between the protected cultural landscape and the open dynamic water landscape in the three creek valleys that crosses Zwevegem.

'Three retention valleys' (7-8) aims to lower the future flood risk downstream by re-naturalizing the floodplains of the three tributaries that cross the urbanized area. Space for water (naturalized flooding) is created alongside planned urbanization projects and includes left over space from infrastructure works, residual spaces within industrial zones and fragments of agricultural land. As so often in urbanized areas, a complete recovery of the natural floodplains is impossible. The claims of the remaining agriculture usually also are persistant. The design proposal defines expanded water edges and accesses that are strategically directed to protect fragile ecosystems, while simultaneously integrating new housing, parking areas with permeable surfaces and public spaces. 'Three retention valleys' is an attempt to operate at a territorial scale of ecological infrastructure. It creates basic components of a regional blue-green structure.

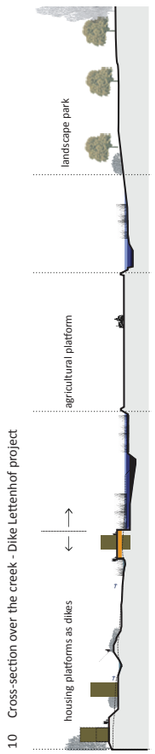
Isabelle Putseys



7 Zwevegem - the three design strategies applied to the tributaries of the gaverbeek creek

8 Zwevegem - the three design strategies in a cross-section over one of the creeks

9 Zwevegem - Pluimbeek, Keibeek, Slijpbeek Creek



10 Cross-section over the creek - Dike Lettenhof project

These two cases are a broad exploration of hybrids – a type of open space that has emerged in highly urbanised areas such as Flanders- as an potential new type of open (public) space. In the context of this work, a hybrid is defined as an open space that consists of seemingly opposing elements: nature and culture; urbanity and ecology; invested and residual space; a space of large infrastructure(s) and small connections. It’s a space in which tensions are accumulated, a space of balances, dialogues, antagonisms and complementary qualities.

Generally, most of the hybrids explored combine four elements: infrastructure, landscape fragments, urban programs and regional events. Large-scale, post-war infrastructure such as a ring road, a railway or a canal often encircles and articulates the hybrid space. The configuration of these regional structures doesn’t match the local spaces they’re projected upon. As a result, the infrastructure isolates part of the surrounding landscape. The isolated open space is, however, not a coherent landscape. It consists of landscape fragments that are neither valuable nor interesting in and of themselves. The open space appears as a neglected, left over space. As the isolated space is vacant and close to settlement areas, these hybrids have the potential to host large-scale urban programs, such as museums, multifunctional halls or schools, where they would act as urban destinations. And in contrast to conventional public spaces, hybrids are often unique large open spaces that are well-suited for ephemeral, regional special events like concerts, on-location theatrical performances, or temporary sporting events.

The space is hybrid as none of the basic elements – culture or nature – dominates or defines the space. The hybrid is not a landscape; it is not an urban space; it’s both at the same time. This type of space is valuable for the dispersed city because it’s an uncontrolled open space.


Infrastructure


Landscape fragments


Urban destinations


Regional events

Photographs of the Deinze hybrid


Deinze


Antwerpen Noordkasteel


Antwerpen Fort Filip


Wijnegem


Geel


Denderleeuw


Ingelmunster


Aalst


Zaventem


Semmerzake


Lebbeke


Lier

Samples of potential hybrid spaces in Flanders

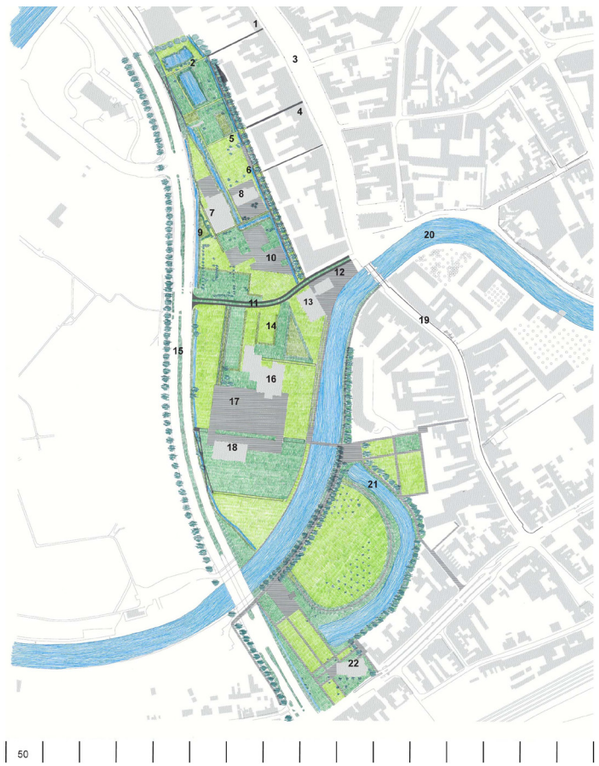
Cultural deposits the case of Deinze

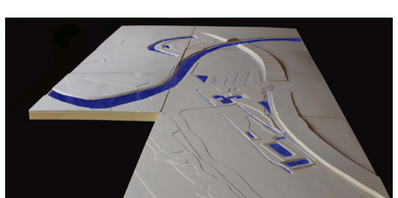
The design for a hybrid in Deinze is an exploration of the role and the position of nature in a multitude of urban programs, cultural elements and destinations. The project is a series of spatial strategies to respond to the potential elimination of nature within the hybrid.

The Deinze hybrid is squeezed between the Meersen, a once characteristic, but today fragmented water-sick landscape, and the city centre. Although the space is in the overlap of two specific open space structures, the tension nature-culture risks being disturbed. Isolated from the surrounding landscape, it is exclusively under the direct influence of the nearby centre, thus leaving an open space that is gradually being filled with urban programs and buildings. To value hybridism in this process of constant urbanisation and to build on the tension between nature and culture, the hybrid is imagined as a specific artificial landscape: a water and grass landscape.

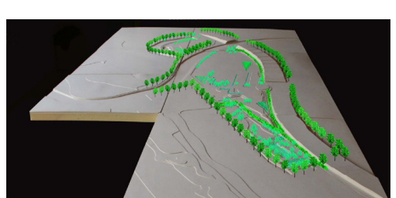
The inhabitants of Deinze profit from the nearness of two complementary public spaces in the middle of the centre: the market as a conventional urban public space and the hybrid as a partly uncontrolled, unorganised space. The complementarities of both spaces depend, in part, on the tension between the isolation and the accessibility of the hybrid. In order to function as a space that may be appropriated by any individual, the hybrid needs to be outside of the urban circuits and, at the same time, part of the urban life. In contrast to the plans of the city to absorb the hybrid in the urban tissue, this project introduces a series of distances that serve to partially isolate the hybrid from its urban surroundings. As a result, the hybrid becomes a space isolated, in part, from both land and city. It becomes an individuated space.

The project demonstrates that a strong characteristic natural structure can respond to the potential dominance of the cultural aspects of the hybrid. It shows that an individuated hybrid can influence the quality of life at both a local and regional level.



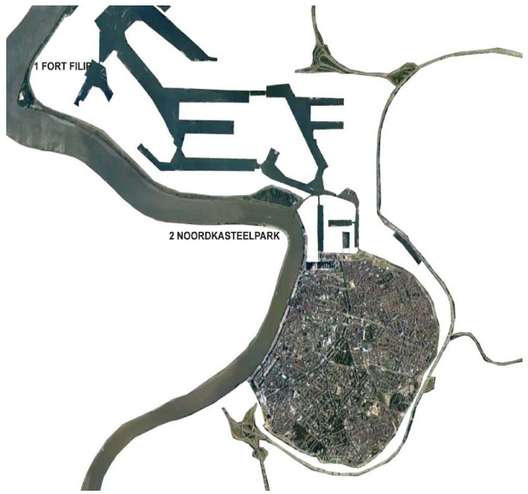


The water scape



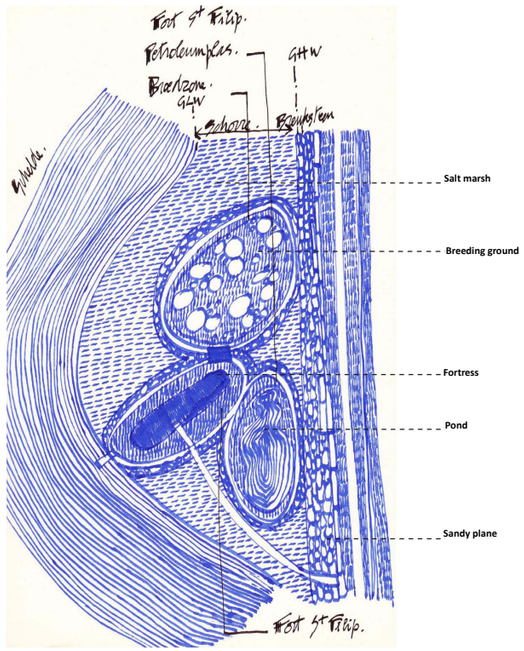
The grass landscape

1 Huys van Thuyne
2 Existing Bassins
3 Market 4 Shopping centre
5 Overflow bassins
6 Kaendel
7 Day care centre
8 Youth centre
9 Water surface
10 Mineral bassin
12 Reinbach square
13 New Administrative centre
14 Wadis
15 Twee bruggen laan
16 Museum
17 Mineral surface
18 New cultural centre
19 Tolpoort street
20 Leie
21 Old meander
22 St Martinus church

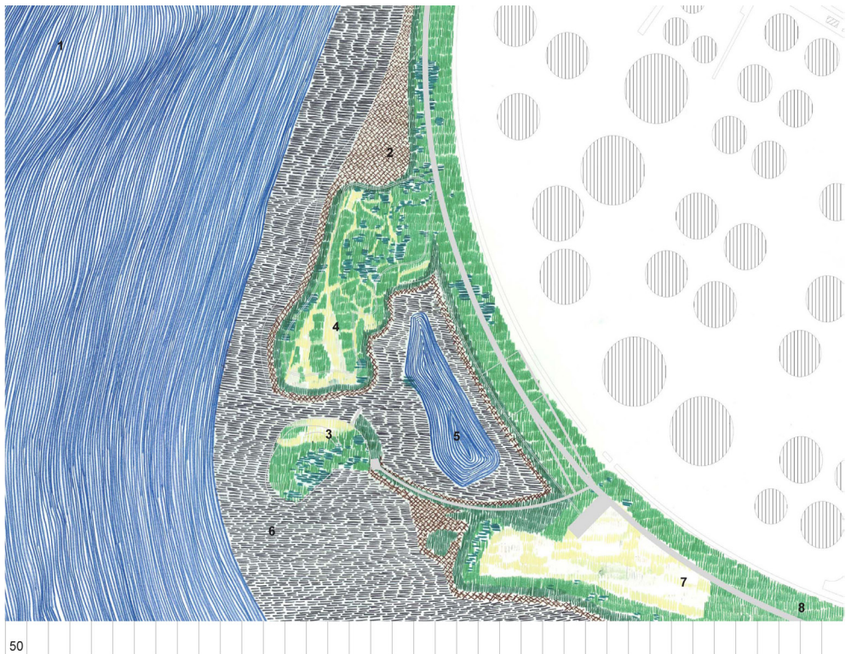


Upholding culture in ecology, Fort Filip

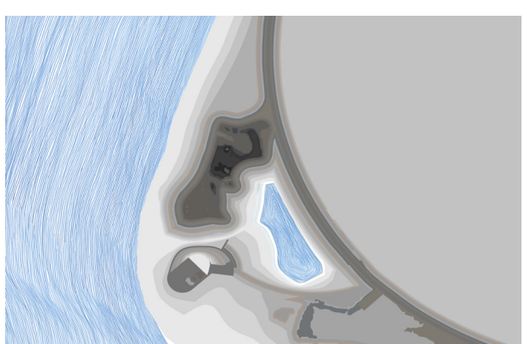
In the case of Deinze, the cultural quality is more dominant than the natural one. This balance is the reverse in the Fort Filip case in Antwerp. The hybrid lies in a narrow strip between the port and the river Scheldt. As compensation area for the extension of the port this space is an important ecological area with a weak cultural program. In contrast to the Deinze case, the exploration of the fort Filip is about developing ways to (re)develop and support an existing cultural program within a fragile ecological space. At present the hybrid is a hidden, unknown open space and the dialogue and tension between nature and culture is limited or non-existent. This project aims to enlarge both elements. It introduces specific salt marsh habitat, while accentuating the cultural elements. By enlarging both, the dialogue between nature and culture becomes more apparent across different scales. In order to create the proposed salt marshes, remodelling of existing topography is required. The hybrid has been altered so that its cultural elements are revealed and become more dominant in the space; they are like pebbles in a river, jamming and influencing the ecological processes in the hybrid, thus reinforcing the complementarities between nature and culture. On a larger scale, the project introduces relations between the hybrid and the left bank and explores the contrast between the industrial infrastructure of the port and the natural elements in the hybrid.



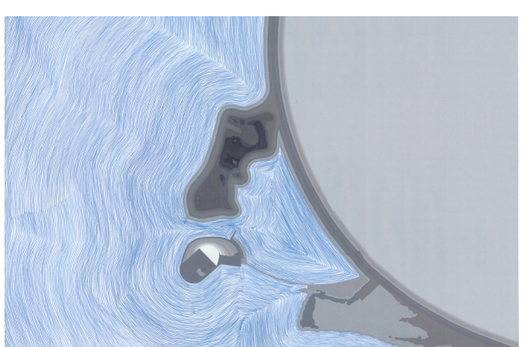
Remodeling of the topography



1 Scheldt 2 Rubble 3 Underground fort 4 Breeding ground 5 Pond 6 Salt Marsh 7 Sandy Plane 8 SIGMA dike

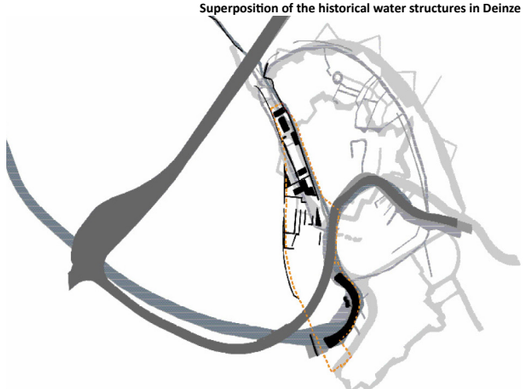


Fort Filip at low tide

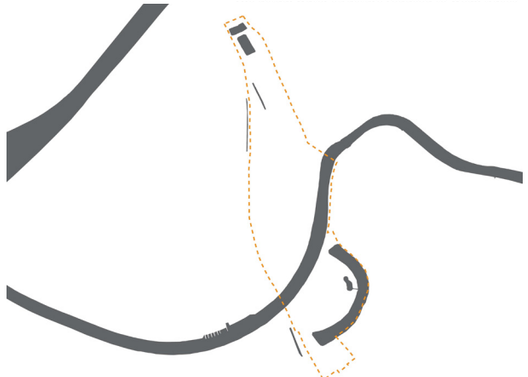


Fort Filip at spring tide

Superposition of the historical water structures in Deinze



The actual water structure reduced to weak traces



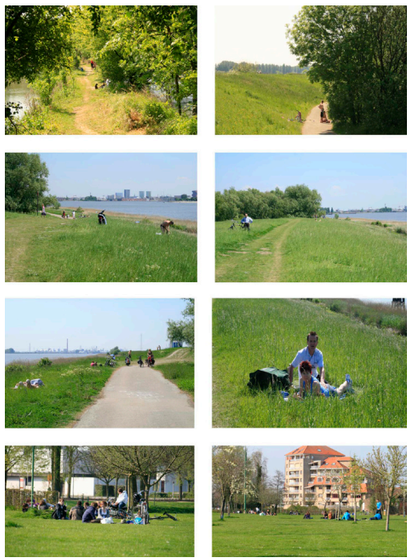
Design challenges and perspectives

The case studies reveal hybrids as open signifiers; spaces open to interpretation. They evoke design based on interpretation and reinterpretation, as opposed to design by invention. Hybrids are open signifiers because they' re weakly signified and their consistent elements are weak residues. This weak spatial character contributes to the perception that they are neglected derelict spaces. But it's their weakness that opens the space. They're like an open text, that seemingly tells a nonsensical and absurd story, but is waiting to be (re)edited and reorganised to reveal its qualities and strengths. Re editing is an attitude in which the results largely depend on the act of selection:"the art lies in the picking up, turning over and putting with"[1]. In this manner, weak residues make the design of hybrids into a small affair, where the designer must be careful about conceptualising what already exists.

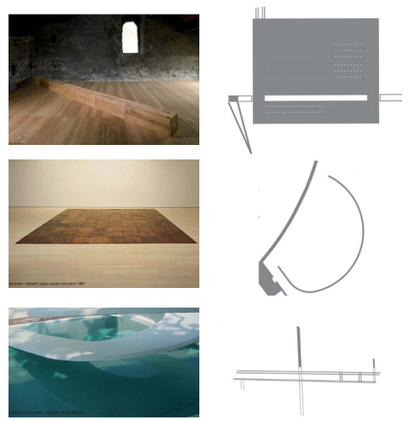
The hybrid as open signifier, as a space of ambivalence and innumerability, is opposed to exclusiveness. If specific elements in the hybrid - spatial, infrastructural, historic, social, or otherwise -become too compelling or too strong they will dominate the space and reduce both its complexity and openness. This is exactly the potential problem with the program and with designs for alternative open spaces based on programs. Any program risks appropriating and designating the space through privatisation or colonisation as the space gradually adapts to the program. This isn't a call to ban programs from hybrids, but they cannot be the basis for design. They should fit and enrich the spatial layout of the hybrid, not the other way around.The importance and surplus value of spaces like hybrids in the urban system lies in their uncontrolled character - the possibility for any inhabitant to use the space in a spontaneous way. The actual and potential use of the space is its main quality, as it is use that mediates between the cut-up elements in the hybrid. The quality of design based on use, especially on spontaneous use, does not lie in the spatial elements themselves, but in the possibilities offered to the observer to make associations and relations between the consistent elements. There's a whole range of tools, more spatial than programmatic, that can be used to incite or afford use: the silent forms, neutral systems, archetypical landscapes, the building as a covered sequence of the space, etc. Again it is the programmatic aspect that troubles the designer. Not only is it impossible to design spontaneous use but, unlike a work of art, every designed element is based on a function or a program that may inevitably reduce the possible use of the space. A way out for designers is to blur the signifier-signified relationship of the spatial elements, thus stimulating individual associations and relationships between them. As a result, open spaces like hybrids can become a shared space, a free haven of public life that is not dominated by a specific social group or an exclusive program. In this way, the design for hybrids or similar alternative spaces enriches the atypical metropolitan constellation with a new type of public space.

Erik Van Daele

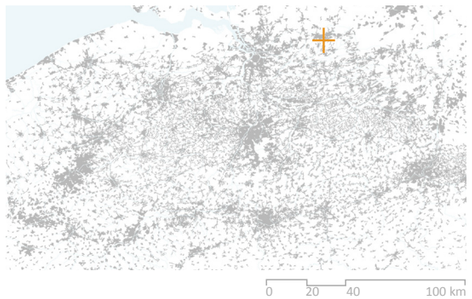
Alison and Peter Smithson in Lichtenstein, C. & Schregenberger, T. ed. (2001). *As found, The discovery of the ordinary. Zurich: Lars Müller publishers and the Zurich museum für Gestaltung*

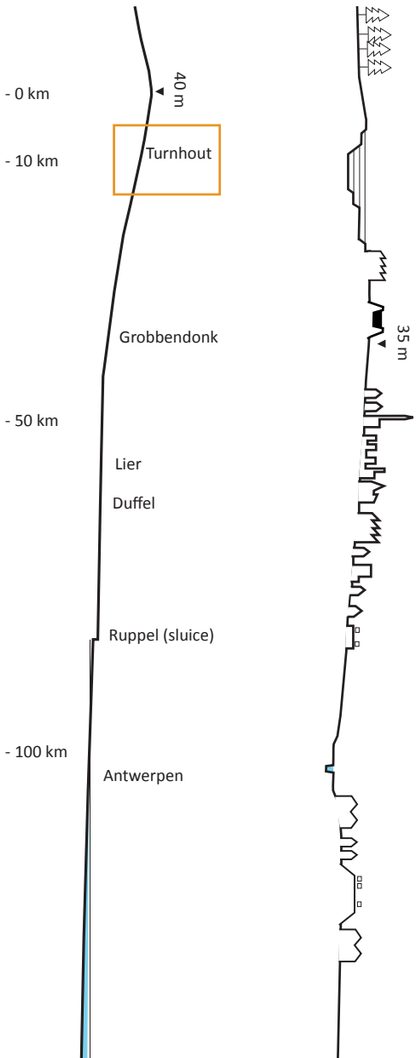


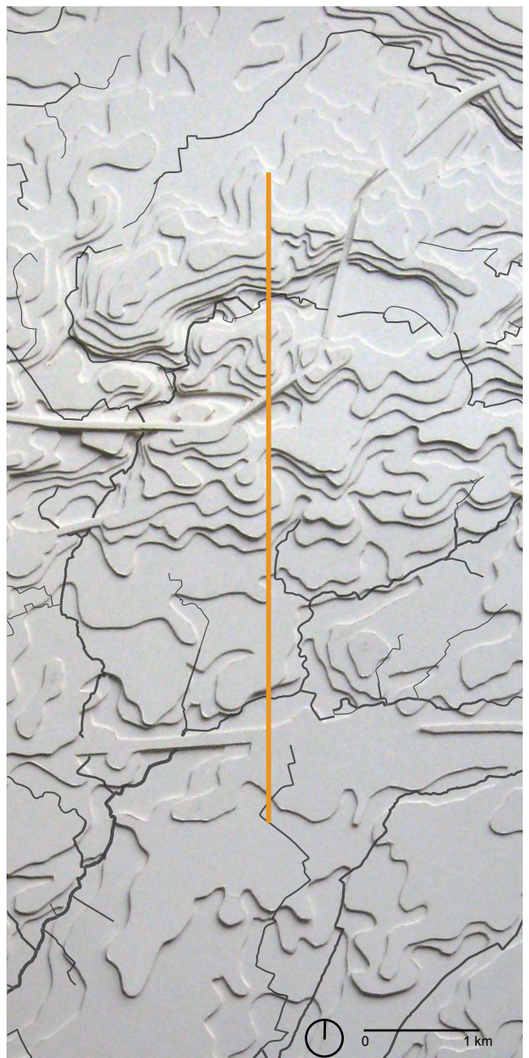
The hybrid as free haven of public life



A strong urbanism of silent forms based on weak residues







The city of Turnhout can be seen as emblematic of the resurgence of water in areas where it was somehow forgotten. Located in the upper part of a watershed, on a sandy hill surrounded by modest creeks, the city itself is not really facing water problems. It is however recognised as the major factor of increasing flood and pollution issues happening along the river below the city. The extensive urbanisation, waterproofing the floor, limits the infiltration of rainwater and pressurizes the combined (black and grey water) drainage system. Consequently, in the event of heavy rain, the sewer system overflows into the river, causing peak flows and pollution. The planned expansion by 15% of the urbanized surface in the medium-term (2005-2025) should further accentuate the current water problems.

In order to mitigate its impact downstream, Turnhout must develop a new rain water drainage and retention system. An official plan proposes hard-engineering solutions of underground pipes and retention volumes. As an alternative to this ambitious but very costly plan, this design research tests the capacity of the urban fabric to integrate the new water system above the surface. This will not only bring about important spatial transformations, but also bring to the fore fundamental features of the site's hydrology, topography and geology and the way in which it relates to the larger urban and landscape structure.

To deal with this question, three distinct and complementary design strategies are developed for the different parts of the city: 1. 'Urban Marshes', 2. 'Threshold Park' and 3. 'the Reclaimed Valley'. They explore how devices such as infiltration zones, retention basins, separate storm water drainage systems and (controlled) flood plains can maximize water retention while simultaneously contribute to the quality of the urban realm. (see next page)

Christian Nolf

Urban Marshes

focuses on the central part of the city (inside the ring) and seeks an alternative to the (planned) piped stormwater drainage system

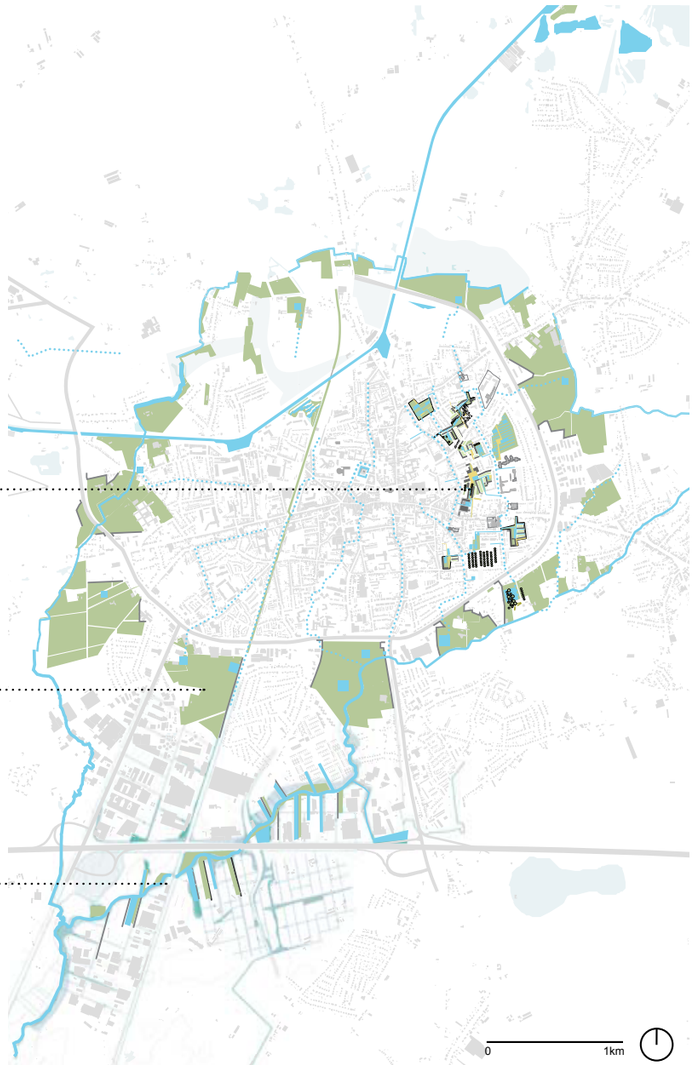
Threshold Park

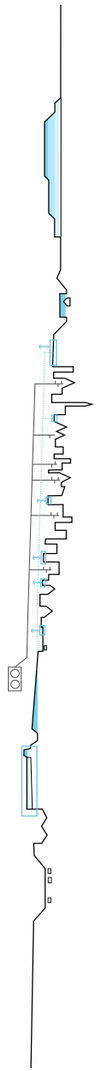
focuses on the interface between the city and the river and the need to integrate new retention basins

Reclaimed Valley

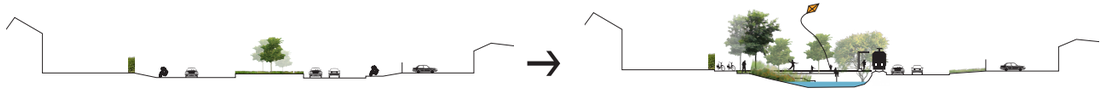
investigates the possibility of making room for water in the urbanised parts of the river valley..

3 design strategies
to maximise Turnhout's
water retention capacity



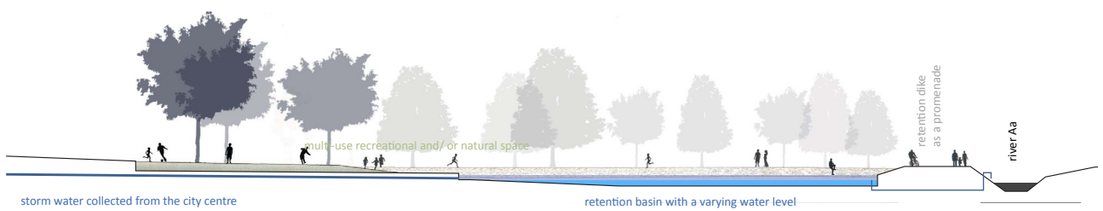


existing public reconfigured as a retention and infiltration basin



Existing ring road profile

New ring profile



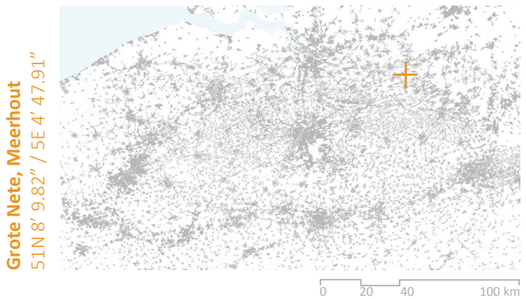
storm water collected from the city centre

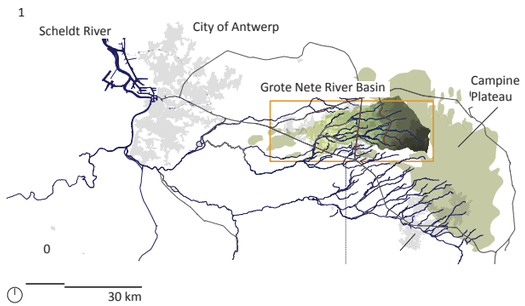
retention basin with a varying water level

the highway as a retention dam

river

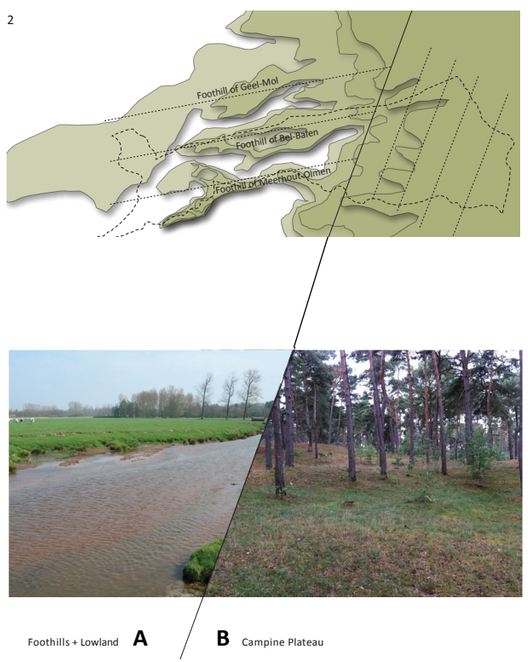
'blue finger' (swale) collecting and cleaning surface water

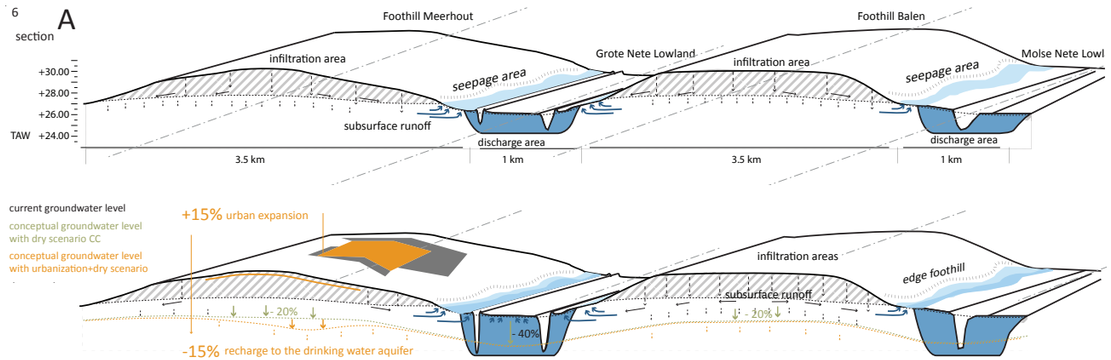




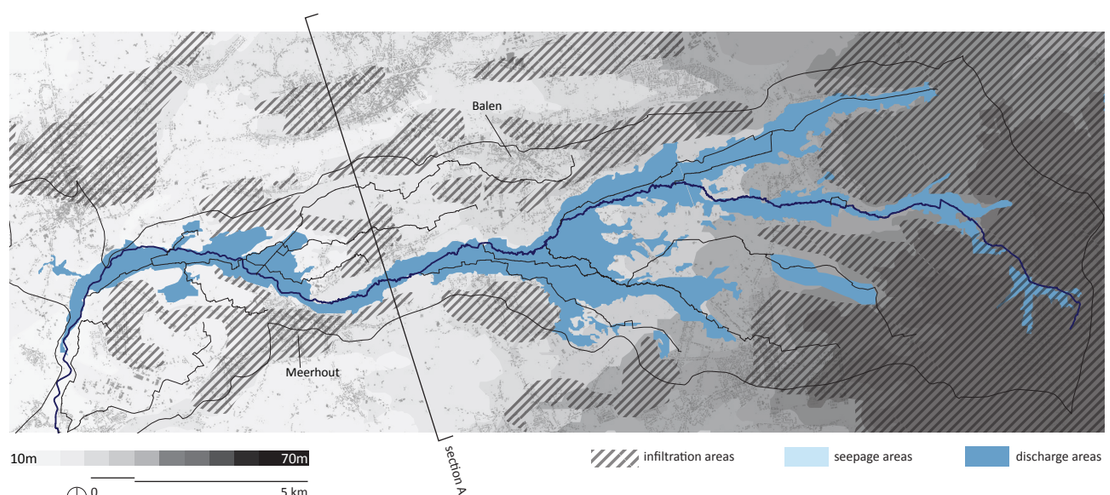
The case study investigates the Grote Nete Basin, an upstream sub-basin of the Scheldt Basin. It finds its origin in the Campine Plateau (1), the watershed between the Maas and Scheldt Rivers. Parallel river valleys that stem from the plateau, created narrow foothills on which urbanization settled in the past. These exist of elevated dry heath landscapes. The Grote Nete Valley today is struggling with a heavily altered water balance which results into contamination of and a decreased level of the ground water as well as local and downstream flooding (3-4). These impacts on the water system can directly be attributed to past developments in the region: large scale water control applied through infrastructural, industrial and urban developments have elevating the risk for flooding downstream in the pursuit of colonizing the region. Rivers were straightened, wetlands drained and creeks covered to allocate fertile lands for crops.

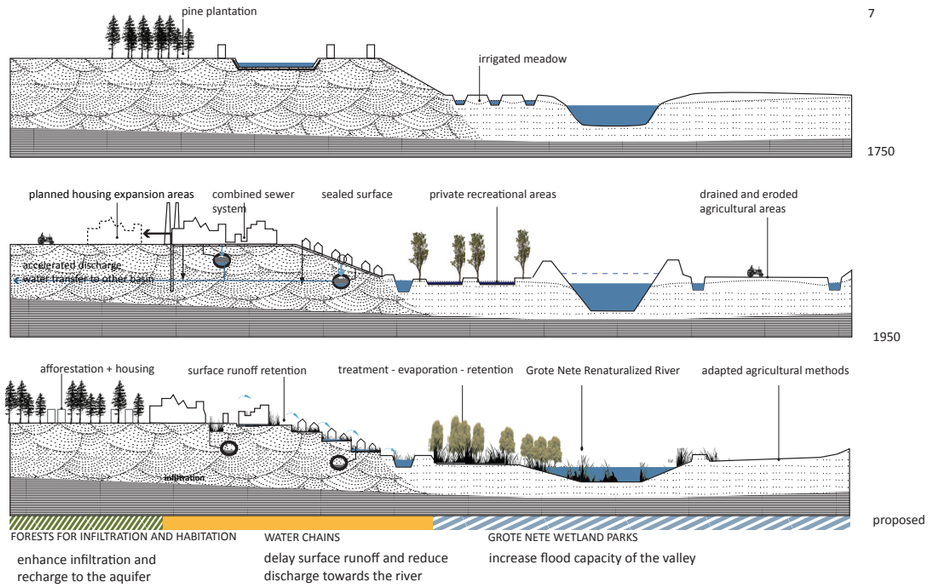
The colonization of the area was made possible through the development of canal network that irrigated (but also contaminated the lowland ecologies with nutritious water) while installing an extensive drainage network at the same time that until today drains the lowlands heaviliy. On the other hand, industrial developments elevated the risk for drought and a decreased water quality due to pumping of ground water, expansion of sewer catchments areas and water transfers out of the watershed, draining wetlands. During the last century, the duplication of sealed surface and the intensification of agricultural activities and methods caused drastic accelerations in the discharge of the rivers; the scaling up of agricultural as well as housing parcels, led to more runoff in less period of time.





The announced climate change scenarios and the expansion of the housing area will increase the effect on the unbalanced water system if conventional water practices, as mentioned above, remains.
Recently, several nature development initiatives in this basin have appealed to water retention principles as an impetus for restoration of wet ecologies in nature reserves along the River. As such, they follow the recent transformations of the water management policies which aspire as much as possible upstream retention. However, none of these proposals have successfully addressed the spatial conflicts that have risen in the Basin between urbanization, nature, agriculture and space for water and that threaten to increase in the light of climate change and the predicted urban expansions.





Informed by the logics of past water systems, the design envisions a landscape structure directed by three main strategies: 1 the Grote Nete wetland park, 2 water chains and 3 forests for infiltration and habitation (8). The main principle focuses on the recovery of the water balance through the redefinition of the urban/water relationship. Illustrated by a series of sections (7), this relationship went *from* an implicit interwoven bond in which hydrological processes were enhanced for productive processes, *to* a disbalanced relationship in which water systems are manipulated by infrastructural developments.

The 'Grote Nete wetland park'-strategy (7-8-9) aims to avoid the ongoing fragmentation of the open landscapes by inserting dikes on which the recreational facilities could be restructured. At the same time they form a transversal device in the valley through which water is retained in constructed flooplains. The 'water chain'-strategy (9) collects surface runoff in the urban fabric, delays and guides it towards these constructed floodplains. In their turn these 'water chain'-trajectories source from the planned development areas located on the most elevated parts of the foothills. Here, the last strategy aims to re-structure Meerhout with the urbanization strategy 'forests for infiltration and habitation' (9). As an alternative for conventional development, it aims to infiltrate surface runoff while greening and densifying the existing urban tissue with alternating strips of housing, forest and infiltration basins.

Isabelle Putseys

9 Three urban design strategies - zoom on Meerhout

Stiemerbeek, Genk
50N 58' 1.4'' / 5E 28' 59.31''

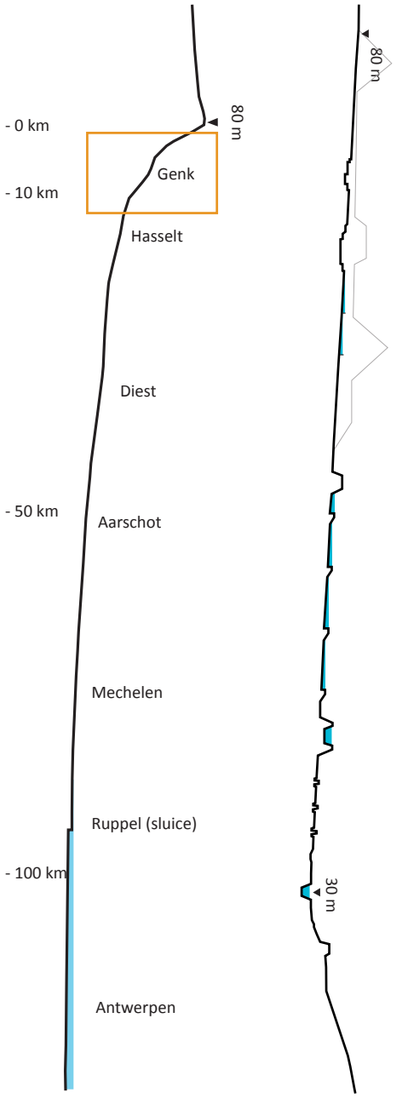
Located in the region of Genk-Diepenbeek, the Stiemerbeek is one of the countless creeks that flow anonymously across the dispersed urban Flanders. Successively used, abused and disused during the 20th century, the Stiemerbeek illustrates how small streams that once played a central role in settlement formation and domestication of the territory, got relegated to the backstage of urban experience. Yet, it appears that this small river is about to resurrect.

Along its 16 km long north-south course, the creek faces all the generic water issues encountered in urban Flanders. They range from the polluting overflows of the combined sewer system, the alteration of the ecological and regulative role of the valley due to the straightening of the creek in a concrete pipe, and finally problems of flood in the lower part of the catchment. In addition to these generic issues, the area is affected by specific problems of subsidence and pollution due to the mining past. A series of projects and studies were recently started by different administrative entities to resolve the water issues. Until now, however, these initiatives are conducted separately and are solely elaborated from a technical perspective.

The question is if a coordinated water management could solve water issues and simultaneously address the important spatial challenges related to the extremelly dispersed character of urbanisation:
a chaotic spatial organisation fragmented by oversized infrastructures and randomly juxtaposing industrial platforms, social housing districts, fragments of nature and a general spread of detached houses.

Three strategic designs are elaborated to solve the water challenges and at the same time address issues of nature conservation, infrastructures and urban (re-)development. Selecting, reinterpreting and optimizing landscapes features, the designs focus on the upper, the middle and the lower part of the creek.

Christian Nolf



‘Inverted Valley’

In the upper part, the project reclaims the valley for water management (alternative surface drainage system), ecology, recreation and soft mobility purposes. Located at the heart of the urban area, the recreated valley becomes an armature that links all the fragmented parts of the city.

‘Collecting Gardens’

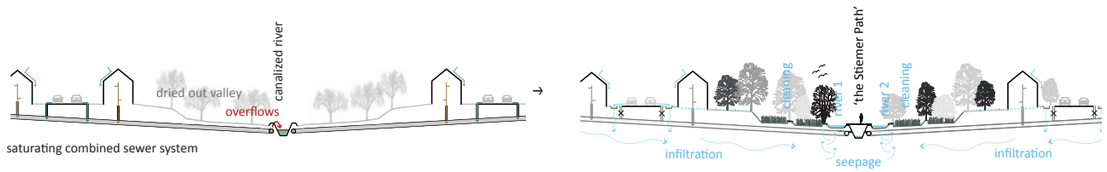
reinterpret the agrarian grid to serve new urban water management issues and structure the dispersed urbanisation.

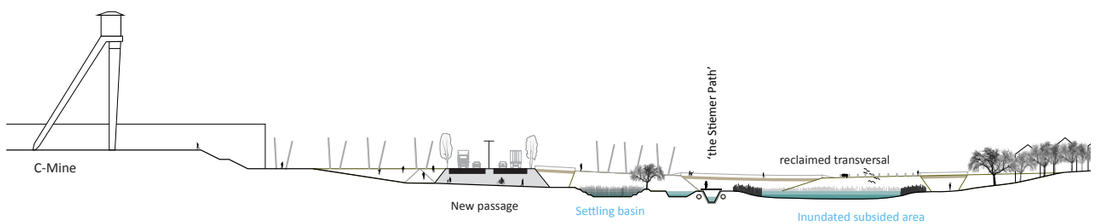
‘Flood Chambers’

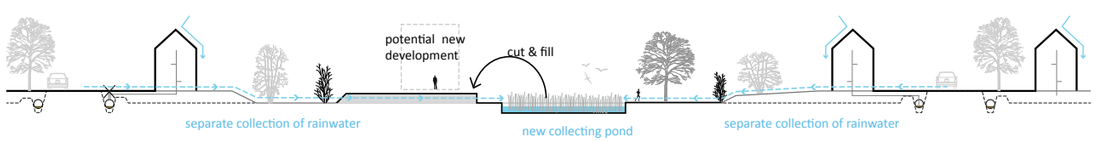
optimize and adapts old dike systems to accommodate water storage facilities, to offer customised flood protections and to frame possible developments and infrastructural projects.

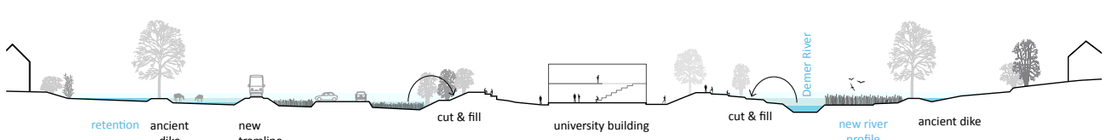
Before After

3 design strategies for the valley









Recycling leftovers. Residual space as a tool for landscape urbanism

Flanders is a diffuse urban space, an urban nebula. By-passing conventional spatial hierarchies like centre and periphery or the urban rural dichotomy, Flanders indeed does not have an urban form in the commonly accepted sense. Instead, Flanders emerges as a hybrid territory. All kinds of appropriation dynamics and development logics impact on its ever ongoing transformation. A wide variety of users of different origins, consumers as well as producers push forward this eternal transformation process. The framework that supports such freedom of appropriation is nothing other then an amalgam of private (and quit small) plots and roads.

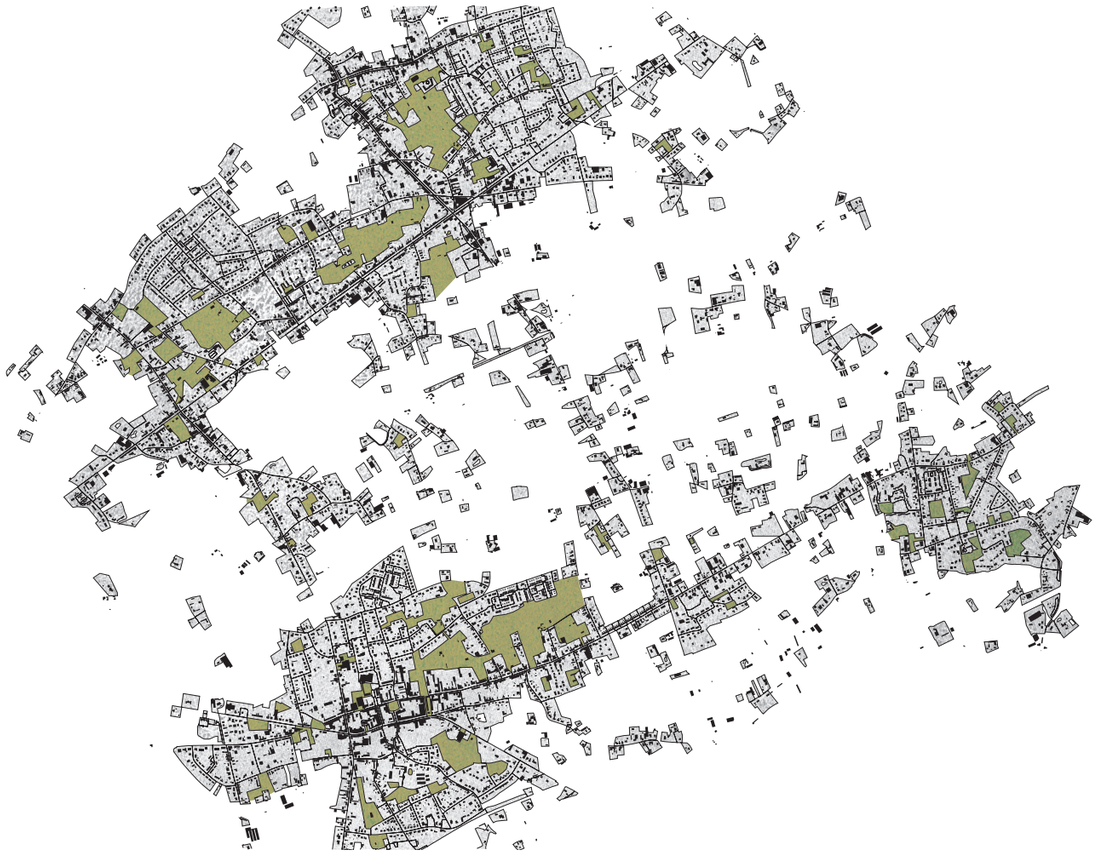
The private plot and the road system might be the most comprehensible places of the diffused city. They form its structuring elements of some sorts. Territorial fragmentation and a condition of randomness are the general characteristics. Architecture, merely articulating the fragment, seems to have lost all its structuring capacity. In turn, and in line with contemporary environmental concerns, the notion of landscape as infrastructure has made its reappearance. Landscape is today indeed considered as a main device of urbanism to create a more coherent urban territory. Landscape indeed has a capacity to deal with fragmentation and randomness, as it can strengthen the territory as a cellular whole while working on both the framework and the fragments it contains. To this end, strategies of landscape urbanism are tested in diverse explorations.

In these explorations the open space is the main strategic asset for almost all in(ter)vention(s). Open spaces in terms of the consolidated categories of the rural and the natural remain rare commodities in Flanders' urban nebula. However, there is a third kind of open spaces completely consistent with its dispersed and fragmented territorial condition. They are in-between leftover spaces, vacant or residual terrains, omnipresent wherever mismatches between development interventions and appropriation processes occurred: fragments of wet or polluted terrains, poor soils, neglected heritage sites and hillsides, oversized plots and outdated infrastructures, inner areas, isolated and cutoff terrains, etc.

Exactly these residual open spaces are permeated by potentialities. They seem randomly situated, but nevertheless contain a system value, and categories of residual space can in fact be distinguished according to location, cause or development potential. Some categories relate directly to forgotten or erased territorial structures. Wetlands for instance reveal hydrological structures, depleted quarry areas punctuate topographical elements or soil characteristics, and neglected heritage sites, enclaved and isolated areas might accentuate historical or (post)industrial settlement patterns like highways and canals. A deep understanding and subtle design of residual spaces can therefore rearticulate these latent territorial structures. When the recognition and design address the system value of these residual spaces, morphological frameworks (as well as the involved ecosystems) in the diffused city can be strengthened.

Space is a scarce resource in Flanders. That makes residual spaces an invaluable centerpiece in the explorations of landscape urbanism. Since instruments and means to activate latent landscape structures for regional development are nonexistent, they offer unexpected opportunities for intervention. Recycling of leftovers seems indeed promising as a new type of landscape development in the diffuse territory that is increasingly governed, shaped and led by the interplay of private market and overregulation, or is it misregulation.

Liesl Vanautgaerden



Enclosed open spaces and inner areas in-between the residential plots

"Het Vlaamse restgebied, ontdekking van het andere landschap"
Onderzoeksgroep Planning & Ontwikkeling i.s.m. OSA, Onderzoeksgroep Stedebouw en Architectuur, KULeuven (2007)
http://www.vlaamsbouwmeester.be/files/43be43f9d37c472f8aee65adb7754bf5.pdf

Enclosed open spaces and inner areas in-between the residential plots &
Meadows and pieces of wet grasslands near waterstreams

Meadows and pieces of wet grasslands near waterstreams &
(Depleted) quarry areas , natural landscape relief and soil constitution

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